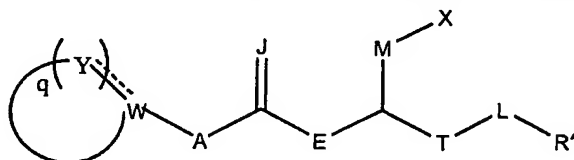


Claims

We claim:

1. A pharmaceutical composition comprising a compound of the structure (I)



5

(I)

wherein  $Y$ , at each occurrence, is independently selected from the group consisting of  $C(O)$ ,  $N$ ,  $CR^1$ ,  $C(R^2)(R^3)$ ,  $NR^5$ ,  $CH$ ,  $O$  and  $S$ ;

$q$  is an integer of from 3 to 10;

10  $A$  is selected from the group consisting of  $O$ ,  $S$ ,  $C(R^{16})(R^{17})$  and  $NR^6$ ;

$E$  is selected from the group consisting of  $CH_2$ ,  $O$ ,  $S$ , and  $NR^7$ ;

$J$  is selected from the group consisting of  $O$ ,  $S$  and  $NR^8$ ;

15  $T$  is selected from the group consisting of  $C(O)$  and  $(CH_2)_b$  wherein  $b$  is an integer of from 0 to 3;

$M$  is selected from the group consisting of  $C(R^9)(R^{10})$  and  $(CH_2)_u$ , wherein  $u$  is an integer of from 0 to 3;

20  $L$  is selected from the group consisting of  $O$ ,  $NR^{11}$ ,  $S$ , and  $(CH_2)_n$  wherein  $n$  is an integer of 0 or 1;

$X$  is selected from the group consisting of  $CO_2B$ ,  $PO_3H_2$ ,  $SO_3H$ ,  $SO_2NH_2$ ,  $SO_2NHCOR^{12}$ ,  $OPO_3H_2$ ,  $C(O)NHC(O)R^{13}$ ,  $C(O)NHSO_2R^{14}$ , hydroxyl, tetrazolyl and hydrogen;

$W$  is selected from the group consisting of  $C$ ,  $CR^{15}$  and  $N$ ;

25  $B$  is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl,

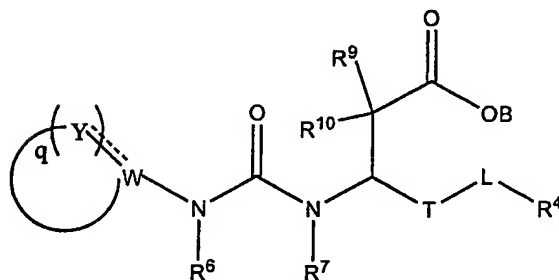
-35-

- alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl; and  
 $R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}$  and  $R^{17}$  at each  
 occurrence are independently selected from the group consisting of  
 hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy,  
 5 thioalkoxy, hydroxyalkyl, aliphatic acyl,  $-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  
 $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ , alkynylamino, alkoxycarbonyl, heterocyclyl,  
 carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)N(C_1-C_3$   
 $\text{alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  $-NHSO_2(C_1-C_3$   
 $\text{alkyl})$ ,  $-NHSO_2(\text{aryl})$ , alkoxyalkyl, alkylamino, alkenylamino,  $di(C_1-$   
 10  $C_3)\text{amino}$ ,  $-C(O)O-(C_1-C_3)\text{alkyl}$ ,  $-C(O)NH-(C_1-C_3)\text{alkyl}$ ,  $-C(O)N(C_1-C_3$   
 $\text{alkyl})_2$ ,  $-CH=NOH$ ,  $-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl, alkoxyalkoxy,  
 carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl,  
 cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl,  
 diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl,  
 15 heterocyclylalkyl, sulfonyl,  $-SO_2-(C_1-C_3 \text{ alkyl})$ ,  $-SO_3-(C_1-C_3 \text{ alkyl})$ ,  
 sulfonamido, carbamate, aryloxyalkyl and  $-C(O)NH(\text{benzyl})$  groups;  
 wherein  $B, R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13},$   
 $R^{14}, R^{15}, R^{16}$  and  $R^{17}$  are unsubstituted or substituted with at least  
 one electron donating or electron withdrawing group;  
 20 wherein when  $L$  is  $NR^{11}$ ,  $R^4$  and  $R^{11}$  taken together may form a ring;  
 and wherein when  $M$  is  $C(R^9)(R^{10})$ ,  $R^9$  and  $R^{10}$  taken together may  
 form a ring;  
 and wherein when  $A$  is  $NR^6$  and at least one  $Y$  is  $CR^1$ ,  $R^1$  and  $R^6$   
 taken together may form a ring;  
 25 or a pharmaceutically acceptable salt thereof;  
 one or more other therapeutically active compounds and a pharmacologically  
 acceptable diluent.
2. A composition of claim 1 wherein  
 30 A is  $NR^6$ ;  
 E is  $NR^7$ ;

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- J is O;  
 M is  $C(R^9)(R^{10})$ ;  
 q is 4 or 5;  
 T is  $(CH_2)_b$  wherein b is 0;  
 5 L is  $(CH_2)_n$  wherein n is 0;  
 X is  $CO_2B$ ;  
 W is C or  $CR^{15}$ ;  
 $R^4$  is selected from the group consisting of aryl, alkylaryl, aralkyl,  
 heterocyclyl, alkylheterocyclyl and heterocyclalkyl; and  
 10  $R^6, R^7, R^9, R^{10}$  and  $R^{15}$  are independently selected from the  
 group consisting of hydrogen and lower alkyl.

3. A pharmaceutical composition comprising a compound of the structure



- 15 wherein Y, at each occurrence, is independently selected from the group  
 consisting of  $C(O)$ , N,  $CR^1$ ,  $C(R^2)(R^3)$ ,  $NR^5$ , CH, O and S;  
 q is an integer of from 3 to 7;  
 T is selected from the group consisting of  $C(O)$  and  $(CH_2)_b$  wherein b is an  
 integer of 0 to 3;  
 20 L is selected from the group consisting of O,  $NR^{11}$ , S, and  
 $(CH_2)_n$  wherein n is an integer of 0 or 1;  
 W is selected from the group consisting of C,  $CR^{15}$  and N;  
 B is selected from the group consisting of hydrogen, alkyl, alkenyl,  
 alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl,

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cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl; and

$R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^9, R^{10}, R^{11}$  and  $R^{15}$  are independently selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl,  $-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ , alkynylamino, alkoxycarbonyl, heterocyclyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)N(C_1-C_3 \text{ alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  $-NHSO_2(C_1-C_3 \text{ alkyl})$ ,  $-NHSO_2(\text{aryl})$ , alkoxyalkyl, alkylamino, alkenylamino,  $di(C_1-C_3 \text{ amino})$ ,  $-C(O)O-(C_1-C_3 \text{ alkyl})$ ,  $-C(O)NH-(C_1-C_3 \text{ alkyl})$ ,  $-C(O)N(C_1-C_3 \text{ alkyl})_2$ ,  $-CH=NOH$ ,  $-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  $-SO_2-(C_1-C_3 \text{ alkyl})$ ,  $-SO_3-(C_1-C_3 \text{ alkyl})$ , sulfonamido, carbamate, aryloxyalkyl and  $-C(O)NH(\text{benzyl})$  groups;

wherein  $B, R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^9, R^{10}, R^{11}$  and  $R^{15}$  are

unsubstituted or substituted with at least one electron donating or electron withdrawing group;

wherein when  $L$  is  $NR^{11}$ ,  $R^4$  and  $R^{11}$  taken together may form a ring;

and wherein  $R^9$  and  $R^{10}$  taken together may form a ring;

and wherein when at least one  $Y$  is  $CR^1$ ,  $R^1$  and  $R^6$  taken together may form a ring;

or a pharmaceutically acceptable salt thereof;

one or more other therapeutically active compounds and a pharmacologically acceptable diluent.

4. A composition of claim 3 wherein

$q$  is 4 or 5;

$W$  is  $C$  or  $CR^{15}$ ;

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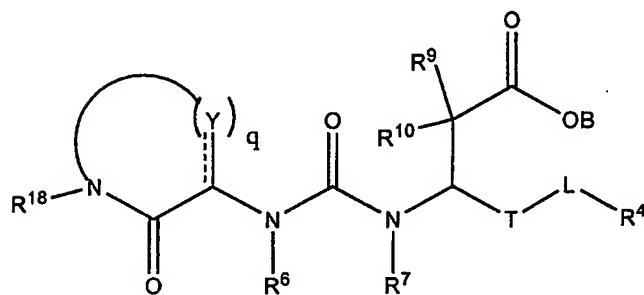
T is  $(\text{CH}_2)_b$  wherein b is 0;

L is  $(\text{CH}_2)_n$  wherein n is 0;

$\text{R}^4$  is selected from the group consisting of aryl, alkylaryl, aralkyl, heterocyclyl, alkylheterocyclyl and heterocyclalkyl; and

5  $\text{R}^6$ ,  $\text{R}^7$ ,  $\text{R}^9$ ,  $\text{R}^{10}$  and  $\text{R}^{15}$  are independently selected from the group consisting of hydrogen and lower alkyl.

5. A pharmaceutical composition comprising a compound of the structure



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wherein Y, at each occurrence, is independently selected from the group consisting of  $\text{C}(\text{O})$ , N,  $\text{CR}^1$ ,  $\text{C}(\text{R}^2)(\text{R}^3)$ ,  $\text{NR}^5$ , CH, O and S;

q is an integer of from 2 to 5;

15 T is selected from the group consisting of  $\text{C}(\text{O})$  and  $(\text{CH}_2)_b$  wherein b is an integer of 0 to 3;

L is selected from the group consisting of O,  $\text{NR}^{11}$ , S, and

$(CH_2)_n$  wherein n is an integer of 0 or 1;

$R^5$ ,  $R^6$ ,  $R^7$ ,  $R^{11}$  and  $R^{18}$  are each independently selected from the group consisting of  
alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, alkynylamino,  
alkoxycarbonyl, heterocycloyl,  $-CH=NOH$ , haloalkyl, alkoxyalkoxy,  
5 carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl,  
cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino,  
heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl,  
carbamate, aryloxyalkyl, hydrogen and  $-C(O)NH(benzyl)$  groups;

B is selected from the group consisting of hydrogen, alkyl, alkenyl,  
10 alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl,  
cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl,  
alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl; and

$R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^9$  and  $R^{10}$  are independently selected from the group consisting of  
hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy,  
15 thioalkoxy, hydroxyalkyl, aliphatic acyl,  $-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ , alkynylamino, alkoxycarbonyl, heterocycloyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)N(C_1-C_3 \text{ alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  $-NHSO_2(C_1-C_3 \text{ alkyl})$ ,  $-NHSO_2(aryl)$ , alkoxyalkyl, alkylamino, alkenylamino,  $di(C_1-C_3 \text{ amino})$ ,  $-C(O)O-(C_1-C_3 \text{ alkyl})$ ,  $-C(O)NH-(C_1-C_3 \text{ alkyl})$ ,  $-C(O)N(C_1-C_3 \text{ alkyl})_2$ ,  $-CH=NOH$ ,  $-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide,  
20 cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl,  
aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl,  
aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  $-SO_2-(C_1-C_3 \text{ alkyl})$ ,  $-SO_3-(C_1-C_3 \text{ alkyl})$ , sulfonamido, carbamate, aryloxyalkyl and  $-C(O)NH(benzyl)$  groups;

wherein B,  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^9$ ,  $R^{10}$ ,  $R^{11}$  and  $R^{18}$  are

unsubstituted or substituted with at least one electron donating or  
electron withdrawing group;

30 wherein when L is  $NR^{11}$ ,  $R^4$  and  $R^{11}$  taken together may form a ring;

and wherein  $R^9$  and  $R^{10}$  taken together may form a ring;

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and wherein when at least one Y is CR<sup>1</sup>, R<sup>1</sup> and R<sup>6</sup> taken

together may form a ring;

or a pharmaceutically acceptable salt thereof, one or more other therapeutically active compounds and a pharmacologically acceptable diluent.

5

6. A composition of claim 5 wherein R<sup>18</sup> is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, cycloalkyl, alkylheterocyclyl, heterocyclalkyl and heterocyclyl;

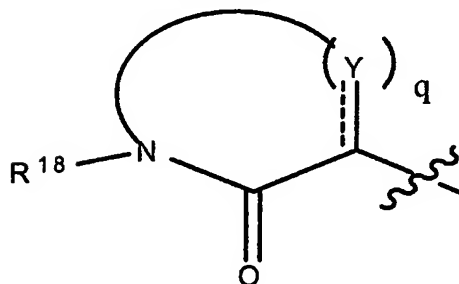
T is (CH<sub>2</sub>)<sub>b</sub> wherein b is 0;

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L is (CH<sub>2</sub>)<sub>n</sub> wherein n is 0;

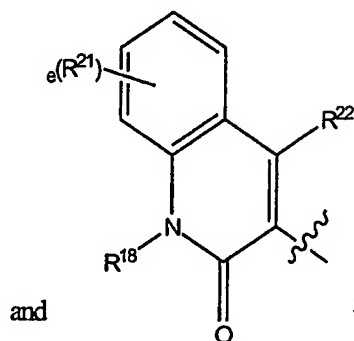
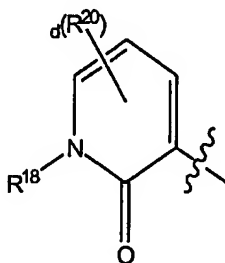
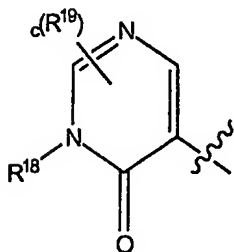
Y is selected from the group consisting of CR<sup>1</sup> and C(R<sup>2</sup>)(R<sup>3</sup>) and q is 2 or 3.

7. A composition of claim 5 wherein



15

is selected from the group consisting of



and

;

- wherein R<sup>19</sup>, R<sup>20</sup>, R<sup>21</sup> and R<sup>28</sup> at each occurrence are independently selected from
- 5 the group consisting of halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl, -CF<sub>3</sub>, -OH, -CO<sub>2</sub>H, -SH, -CN, -NO<sub>2</sub>, -NH<sub>2</sub>, alkynylamino, alkoxycarbonyl, heterocycloyl, carboxy, -N(C<sub>1</sub>-C<sub>3</sub> alkyl)-C(O)(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHC(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)C(O)NH(C<sub>1</sub>-C<sub>3</sub>alkyl), -NHC(O)NH(C<sub>1</sub>-C<sub>6</sub> alkyl),
- 10 -NHSO<sub>2</sub>(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHSO<sub>2</sub>(aryl), alkoxyalkyl, alkylamino, alkenylamino, di(C<sub>1</sub>-C<sub>3</sub>)amino, -C(O)O-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)NH-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)<sub>2</sub>, -CH=NOH, -PO<sub>3</sub>H<sub>2</sub>, -OPO<sub>3</sub>H<sub>2</sub>, haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino,
- 15 heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), -SO<sub>3</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), sulfonamido, carbamate, aryloxyalkyl and -C(O)NH(benzyl) groups;
- R<sup>18</sup> is selected from the group consisting of alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, alkynylamino, alkoxycarbonyl, heterocycloyl, -CH=NOH,
- 20 haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, carbamate, aryloxyalkyl, hydrogen and -C(O)NH(benzyl) groups;
- 25 R<sup>22</sup> is selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl, -CF<sub>3</sub>, -CO<sub>2</sub>H, -SH, -CN, -NO<sub>2</sub>, -NH<sub>2</sub>, -OH, alkynylamino, alkoxycarbonyl, heterocycloyl, carboxy, -N(C<sub>1</sub>-C<sub>3</sub> alkyl)-C(O)(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHC(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)C(O)NH(C<sub>1</sub>-C<sub>3</sub>alkyl), -NHC(O)NH(C<sub>1</sub>-C<sub>6</sub> alkyl), -NHSO<sub>2</sub>(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHSO<sub>2</sub>(aryl), alkoxyalkyl, alkylamino,
- 30 alkenylamino, di(C<sub>1</sub>-C<sub>3</sub>)amino, -C(O)O-(C<sub>1</sub>-C<sub>3</sub>)alkyl,



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5 -C(O)NH-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)<sub>2</sub>, -CH=NOH, -PO<sub>3</sub>H<sub>2</sub>,  
 -OPO<sub>3</sub>H<sub>2</sub>, haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide,  
 cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy,  
 arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl,  
 aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl),  
 -SO<sub>3</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), sulfonamido, carbamate, aryloxyalkyl and  
 -C(O)NH(benzyl) groups;

c is an integer of zero to two;

d is an integer of zero to three;

10 e is an integer of zero to four; and

i is an integer of zero to two.

8. The composition of claim 5 wherein R<sup>18</sup> is aralkyl;

R<sup>4</sup> is aryl;

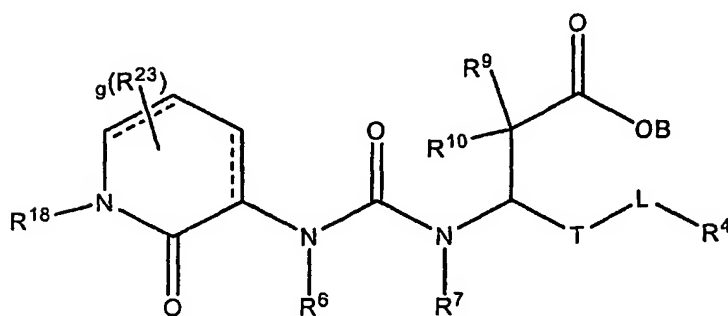
15 T is (CH<sub>2</sub>)<sub>b</sub> where b is zero;

L is (CH<sub>2</sub>)<sub>n</sub> where n is zero; and,

B, R<sup>6</sup>, R<sup>7</sup>, R<sup>9</sup> and R<sup>10</sup> are each independently hydrogen.

9. A pharmaceutical composition comprising a compound of the structure

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wherein T is selected from the group consisting of C(O) and (CH<sub>2</sub>)<sub>b</sub> wherein b is an integer of from 0 to 3;

L is selected from the group consisting of O, NR<sup>11</sup>, S, and

$(CH_2)_n$  wherein n is an integer of 0 or 1;

g is an integer of from 0 to 7;

B is selected from the group consisting of hydrogen, alkyl, alkenyl,

alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl,

5 cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl;

$R^4$ ,  $R^9$ ,  $R^{10}$  and  $R^{23}$  at each occurrence are independently selected from the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl,

10  $-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ , alkynylamino, alkoxy carbonyl, heterocycloyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)N(C_1-C_3 \text{ alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  $-NHSO_2(C_1-C_3 \text{ alkyl})$ ,  $-NHSO_2(\text{aryl})$ , alkoxyalkyl, alkylamino, alkenylamino, di( $C_1-C_3$ )amino,  $-C(O)O-(C_1-C_3)\text{alkyl}$ ,

15  $-C(O)NH-(C_1-C_3)\text{alkyl}$ ,  $-C(O)N(C_1-C_3 \text{ alkyl})_2$ ,  $-CH=NOH$ ,  $-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  $-SO_2-(C_1-C_3 \text{ alkyl})$ ,  $-SO_3-(C_1-C_3 \text{ alkyl})$ , sulfonamido, carbamate, aryloxyalkyl and  $-C(O)NH(\text{benzyl})$  groups;

$R^6$ ,  $R^7$ ,  $R^{11}$  and  $R^{18}$  are each independently selected from the group consisting of alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, alkynylamino, alkoxy carbonyl, heterocycloyl,  $-CH=NOH$ , haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, carbamate, aryloxyalkyl, hydrogen and  $-C(O)NH(\text{benzyl})$  groups;

25 wherein B,  $R^4$ ,  $R^6$ ,  $R^7$ ,  $R^9$ ,  $R^{10}$ ,  $R^{11}$ ,  $R^{18}$  and  $R^{23}$  are unsubstituted or substituted with at least one electron donating or electron withdrawing group;

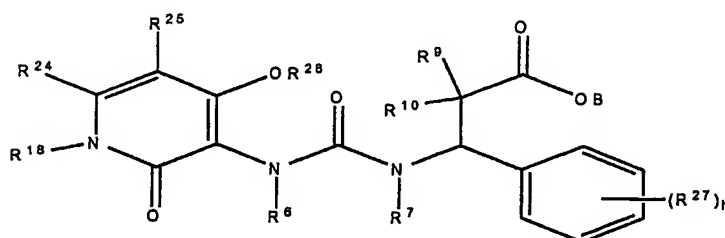
30 wherein when L is  $NR^{11}$ ,  $R^4$  and  $R^{11}$  taken together may form a ring;

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and wherein  $R^9$  and  $R^{10}$  taken together may form a ring;  
 or a pharmaceutically acceptable salt thereof;  
 one or more other therapeutically active compounds and a pharmacologically  
 acceptable diluent.

5

10. A pharmaceutical composition comprising a compound of the structure



10

wherein h is an integer of zero to five;

B is selected from the group consisting of hydrogen, alkyl, alkenyl,  
 alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl,  
 cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl,  
 alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl;

15

$R^9$ ,  $R^{10}$ ,  $R^{24}$  and  $R^{25}$  are each independently selected from the group consisting of  
 hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy,  
 thioalkoxy, hydroxyalkyl, aliphatic acyl,

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$-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ , alkynylamino, alkoxycarbonyl,  
 heterocyclyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  
 $-NHC(O)N(C_1-C_3 \text{ alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  
 $-NHSO_2(C_1-C_3 \text{ alkyl})$ ,  $-NHSO_2(\text{aryl})$ , alkoxyalkyl, alkylamino,  
 alkenylamino,  $di(C_1-C_3)\text{amino}$ ,  $-C(O)O-(C_1-C_3)\text{alkyl}$ ,  $-C(O)NH-(C_1-$   
 $C_3)\text{alkyl}$ ,  $-C(O)N(C_1-C_3 \text{ alkyl})_2$ ,  $-CH=NOH$ ,

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$-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide,  
 cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl,  
 aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl,

aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), -SO<sub>3</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), sulfonamido, carbamate, aryloxyalkyl and -C(O)NH(benzyl) groups;

R<sup>27</sup>, at each occurrence, is independently selected from the group consisting of  
 5 halogen, hydroxyl, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl,

-CF<sub>3</sub>, -CO<sub>2</sub>H, -SH, -CN, -NO<sub>2</sub>, -NH<sub>2</sub>, alkynylamino, alkoxycarbonyl, heterocycloyl, carboxy, -N(C<sub>1</sub>-C<sub>3</sub> alkyl)-C(O)(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHC(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)C(O)NH(C<sub>1</sub>-C<sub>3</sub>alkyl), -NHC(O)NH(C<sub>1</sub>-C<sub>6</sub> alkyl),  
 10 -NHSO<sub>2</sub>(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHSO<sub>2</sub>(aryl), -N(C<sub>1</sub>-C<sub>3</sub>alkyl)SO<sub>2</sub>(C<sub>1</sub>-C<sub>3</sub>alkyl), -N(C<sub>1</sub>-C<sub>3</sub>alkyl)SO<sub>2</sub>(aryl), alkoxyalkyl, alkylamino, alkenylamino, di(C<sub>1</sub>-C<sub>3</sub>)amino, -C(O)O-(C<sub>1</sub>-C<sub>3</sub>)alkyl,

-C(O)NH-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)<sub>2</sub>, -CH=NOH, -PO<sub>3</sub>H<sub>2</sub>, -OPO<sub>3</sub>H<sub>2</sub>, haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl, -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), -SO<sub>3</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), sulfonamido, carbamate, aryloxyalkyl and -C(O)NH(benzyl) groups;

20 R<sup>6</sup>, R<sup>7</sup> and R<sup>18</sup> are each independently selected from the group consisting of alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, alkynylamino, alkoxycarbonyl, heterocycloyl, -CH=NOH, haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, carbamate, aryloxyalkyl, hydrogen and -C(O)NH(benzyl) groups; and,

25 R<sup>26</sup> is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, -CF<sub>3</sub>, alkoxycarbonyl, heterocycloyl, carboxy, -C(O)O-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)NH-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)<sub>2</sub>, -  
 30 PO<sub>3</sub>H<sub>2</sub>, haloalkyl, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl, biaryl, heterocyclyl, alkylaryl, aralkenyl,

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aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  $-\text{SO}_2-(\text{C}_1-\text{C}_3 \text{ alkyl})$ ,  
 sulfonamido, aryloxyalkyl and  $-\text{C}(\text{O})\text{NH}(\text{benzyl})$  groups;  
 wherein B,  $\text{R}^6$ ,  $\text{R}^7$ ,  $\text{R}^9$ ,  $\text{R}^{10}$ ,  $\text{R}^{18}$ ,  $\text{R}^{24}$ ,  $\text{R}^{25}$ ,  $\text{R}^{26}$  and  $\text{R}^{27}$  are unsubstituted or  
 substituted with at least one electron donating or electron withdrawing group;

- 5                    wherein  $\text{R}^{18}$  and  $\text{R}^{24}$  taken together may form a ring;  
                       $\text{R}^{24}$  and  $\text{R}^{25}$  taken together may form a ring;  
                       $\text{R}^{25}$  and  $\text{R}^{26}$  taken together may form a ring;  
                      and wherein  $\text{R}^9$  and  $\text{R}^{10}$  taken together may form a ring;

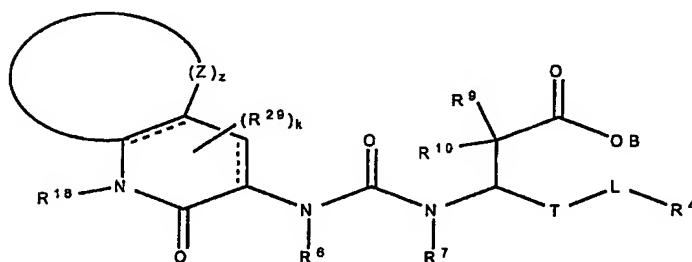
or a pharmaceutically acceptable salt thereof;

- 10                   one or more other therapeutically active compounds and a pharmacologically  
 acceptable diluent.

11.    The composition of claim 10 wherein B,  $\text{R}^6$ ,  $\text{R}^7$ ,  $\text{R}^9$ ,  $\text{R}^{10}$ ,  $\text{R}^{24}$ ,  $\text{R}^{25}$  and  $\text{R}^{26}$  are each  
 independently hydrogen and  $\text{R}^{18}$  is substituted or unsubstituted aralkyl.

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12.    A pharmaceutical composition comprising a compound of the structure



- 20                   wherein Z, at each occurrence, is independently selected from the group  
                      consisting of C(O), N,  $\text{CR}^{30}$ ,  $\text{C}(\text{R}^{31})(\text{R}^{32})$ ,  $\text{NR}^{33}$ , CH, O and S;  
                      z is an integer of from 3 to 6;  
                      k is an integer of from 0 to 5;  
                      T is selected from the group consisting of C(O) and  $(\text{CH}_2)_b$  wherein b is an  
                      integer of from 0 to 3;  
 25                   L is selected from the group consisting of O,  $\text{NR}^{11}$ , S, and

$(CH_2)_n$  wherein n is an integer of 0 or 1;

$R^6$ ,  $R^7$ ,  $R^{11}$ ,  $R^{18}$  and  $R^{33}$  are each independently selected from the group consisting of  
alkyl, alkenyl, alkynyl, hydroxyalkyl, aliphatic acyl, alkynylamino,  
alkoxycarbonyl, heterocycloyl,  $-CH=NOH$ , haloalkyl, alkoxyalkoxy,  
5 carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl, cycloalkynyl,  
cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl, thioaryl, diarylamino,  
heterocyclyl, alkylaryl, aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl,  
carbamate, aryloxyalkyl, hydrogen and  $-C(O)NH(\text{benzyl})$  groups;

B is selected from the group consisting of hydrogen, alkyl, alkenyl,  
10 alkynyl, hydroxyalkyl, haloalkyl,  $-CF_3$ , cycloalkyl, cycloalkenyl,  
cycloalkynyl, cycloalkylalkyl, aryl, heterocyclyl, alkylaryl, aralkenyl, aralkyl,  
alkylheterocyclyl, heterocyclylalkyl and aryloxyalkyl;

$R^4$ ,  $R^9$ ,  $R^{10}$ ,  $R^{30}$ ,  $R^{31}$  and  $R^{32}$  at each occurrence are independently selected from  
the group consisting of hydrogen, halogen, alkyl, alkenyl, alkynyl, alkoxy,  
15 alkenoxy, alkynoxy, thioalkoxy, hydroxyalkyl, aliphatic acyl,  $-CF_3$ ,  
 $-CO_2H$ ,  $-SH$ ,  $-OH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ , alkynylamino, alkoxycarbonyl,  
heterocycloyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-C(O)(C_1-C_3 \text{ alkyl})$ ,  
 $-NHC(O)N(C_1-C_3 \text{ alkyl})C(O)NH(C_1-C_3 \text{ alkyl})$ ,  $-NHC(O)NH(C_1-C_6 \text{ alkyl})$ ,  
 $-NHSO_2(C_1-C_3 \text{ alkyl})$ ,  $-NHSO_2(\text{aryl})$ , alkoxyalkyl, alkylamino,  
20 alkenylamino, di( $C_1-C_3$ )amino,  $-C(O)O-(C_1-C_3 \text{ alkyl})$ ,  $-C(O)NH-(C_1-C_3 \text{ alkyl})$ ,  
 $-C(O)N(C_1-C_3 \text{ alkyl})_2$ ,  $-CH=NOH$ ,  $-PO_3H_2$ ,  $-OPO_3H_2$ , haloalkyl,  
alkoxyalkoxy, carboxaldehyde, carboxamide, cycloalkyl, cycloalkenyl,  
cycloalkynyl, cycloalkylalkyl, aryl, aroyl, aryloxy, arylamino, biaryl,  
thioaryl, diarylamino, heterocyclyl, alkylaryl, aralkenyl, aralkyl,  
25 alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  $-SO_2-(C_1-C_3 \text{ alkyl})$ ,  $-SO_3-$   
 $(C_1-C_3 \text{ alkyl})$ , sulfonamido, carbamate, aryloxyalkyl and  
 $-C(O)NH(\text{benzyl})$  groups; and

$R^{29}$ , at each occurrence, is independently selected from the group consisting of  
halogen, alkyl, alkenyl, alkynyl, alkoxy, alkenoxy, alkynoxy, thioalkoxy,  
30 hydroxyalkyl, aliphatic acyl,  $-CF_3$ ,  $-CO_2H$ ,  $-SH$ ,  $-CN$ ,  $-NO_2$ ,  $-NH_2$ ,  $-OH$ ,  
alkynylamino, alkoxycarbonyl, heterocycloyl, carboxy,  $-N(C_1-C_3 \text{ alkyl})-$

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C(O)(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHC(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)C(O)NH(C<sub>1</sub>-C<sub>3</sub>alkyl),  
 -NHC(O)NH(C<sub>1</sub>-C<sub>6</sub> alkyl), -NHSO<sub>2</sub>(C<sub>1</sub>-C<sub>3</sub> alkyl), -NHSO<sub>2</sub>(aryl),  
 alkoxyalkyl, alkylamino, alkenylamino, di(C<sub>1</sub>-C<sub>3</sub>)amino, -C(O)O-(C<sub>1</sub>-  
 C<sub>3</sub>)alkyl, -C(O)NH-(C<sub>1</sub>-C<sub>3</sub>)alkyl, -C(O)N(C<sub>1</sub>-C<sub>3</sub> alkyl)<sub>2</sub>, -CH=NOH,  
 5 -PO<sub>3</sub>H<sub>2</sub>, -OPO<sub>3</sub>H<sub>2</sub>, haloalkyl, alkoxyalkoxy, carboxaldehyde, carboxamide,  
 cycloalkyl, cycloalkenyl, cycloalkynyl, cycloalkylalkyl, aryl, aroyl,  
 aryloxy, arylamino, biaryl, thioaryl, diarylamino, heterocyclyl, alkylaryl,  
 aralkenyl, aralkyl, alkylheterocyclyl, heterocyclylalkyl, sulfonyl,  
 -SO<sub>2</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), -SO<sub>3</sub>-(C<sub>1</sub>-C<sub>3</sub> alkyl), sulfonamido, carbamate,  
 10 aryloxyalkyl and -C(O)NH(benzyl) groups;  
 wherein B, R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, R<sup>7</sup>, R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>18</sup>, R<sup>29</sup>, R<sup>30</sup>, R<sup>31</sup>, R<sup>32</sup> and R<sup>33</sup> are  
 unsubstituted or substituted with at least one electron donating or electron  
 withdrawing group;  
 wherein when L is NR<sup>11</sup>, R<sup>4</sup> and R<sup>11</sup> taken together may form a ring;  
 15 and wherein R<sup>9</sup> and R<sup>10</sup> taken together may form a ring;  
 or a pharmaceutically acceptable salt thereof;  
 one or more other therapeutically active compounds and a pharmacologically  
 acceptable diluent.

20 13. The composition of claim 12 wherein z is three or four.

14. The composition of claim 1 where the compound of structure (I) is (3S)-3-[(1-(2-  
 chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl]amino}carbonyl]amino]-3-  
 (4-methylphenyl)propanoic acid and pharmaceutically acceptable salts thereof.

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15. The composition of claim 1 where the compound of structure (I) is (3S)-3-[(1-(2-  
 chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta[b]pyridin-3-  
 l]amino}carbonyl]amino]-3-(4-methylphenyl)propanoic acid and pharmaceutically acceptable  
 salts thereof.

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16. The composition of claim 1 where the compound of structure (I) is (3S)-3-[(1-(2-

chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl]amino} carbonyl)amino]-3-[3-(diethylamino)phenyl]propanoic acid and pharmaceutically acceptable salts thereof.

17. The composition of claim 1 where the compound of structure (I) is (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta[b]pyridin-3-yl)amino} carbonyl)amino]-3-(3-isopropylphenyl)propanoic acid and pharmaceutically acceptable salts thereof.

18. The composition of claim 1 where the compound of structure (I) is (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-1,2-dihydro-1,8-naphthyridin-3-yl)amino} carbonyl)amino]-3-(4-methylphenyl)propanoic acid and pharmaceutically acceptable salts thereof.

19. The composition of claim 1 where the other therapeutically active compounds are selected from the group consisting of IL-5 antagonists, CCR-3 antagonists, corticosteroids, antihistamines, Leukotrine antagonists, COX-I and COX-II inhibitors, mast cell stabilizers, anti IL-5 and anti IgE antibodies, IL-5 synthesis and release inhibitors, TNF- $\alpha$  inhibitors, p38 MAP kinase inhibitors, tryptase inhibitors, anticytokine/antichemokine agents, vaccines, cromolyn, selectin antagonists, PDE 4 inhibitors,  $\beta$ -agonists, muscarinic antagonists and immunosuppressives, CD20 antagonists and syk tyrosine kinase inhibitors.

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20. A method for treating an inflammatory disease in a mammal comprising administering to said mammal a therapeutically effective amount of a composition of claim 1.

21. The method of claim 20 wherein the inflammatory disease is selected from psoriasis, asthma, atherosclerosis, multiple sclerosis, Guillan-Barr Syndrome, rheumatoid arthritis, inflammatory bowel disease and reperfusion injury.

22. A method for treating an inflammatory disease in a mammal comprising administering to said mammal a therapeutically effective amount of a combination of a compound of structure (I) in claim 1 and an effective amount of one or more other therapeutic compounds.



23. The method of claim 22 wherein the inflammatory disease is selected from psoriasis, asthma, atherosclerosis, multiple sclerosis, Guillan-Barr Syndrome, rheumatoid arthritis, inflammatory bowel disease and reperfusion injury.

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24. The composition of claim 19 wherein the compound of structure (I) is selected from the group consisting of (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl)amino]carbonylamino-3-(4-methylphenyl)propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta [b]pyridin-3-yl)amino]carbonylamino-3-(4-methylphenyl)propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl)amino]carbonylamino-3-[3-(diethylamino)phenyl]propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta[b]pyridin-3-yl) amino]carbonylamino-3-(3-isopropylphenyl)propanoic acid; and (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-1,2-dihydro-1,8-naphthyridin-3-yl)amino] carbonyl amino-3-(4-methylphenyl)propanoic acid and pharmaceutically acceptable salts thereof.

25. The method of claim 20 wherein the compound of structure (I) is selected from the group consisting of (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl)amino]carbonylamino-3-(4-methylphenyl)propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta [b]pyridin-3-yl)amino]carbonylamino-3-(4-methylphenyl)propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-5-methyl-2-oxo-1,2-dihydropyridin-3-yl)amino]carbonylamino-3-[3-(diethylamino)phenyl]propanoic acid; (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-2,5,6,7-tetrahydro-1H-cyclopenta[b]pyridin-3-yl) amino]carbonylamino-3-(3-isopropylphenyl)propanoic acid; and (3S)-3-[(1-(2-chlorobenzyl)-4-hydroxy-2-oxo-1,2-dihydro-1,8-naphthyridin-3-yl)amino] carbonyl amino-3-(4-methylphenyl)propanoic acid and pharmaceutically acceptable salts thereof.

26. A kit comprising in a single package, one container comprising a compound that inhibits binding of an  $\alpha_4\beta_1$  integrin to its receptors as set forth in structure (I) in claim 1 in a

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pharmaceutically acceptable carrier and one or more separate containers comprising other therapeutic compounds in pharmaceutically acceptable carriers, with the compound that inhibits binding of  $\alpha_4\beta_1$  integrin to its receptors and the other therapeutic compounds being present in amounts such that the combination is effective to treat disease states mediated by

5  $\alpha_4\beta_1$  integrin binding.